Shooting-Stars.

Shooting-stars have been observed from eight stations in Denmark and Norway in the period August 9th–11th. Only on August 11th the weather was favorable. At these stations 170 paths of shooting-stars were mapped, but only three proved suitable for calculation. These three meteors have given the following results:—

For Observation.

No.	Time.	Station.	Beginning.	Ending.	Mag.	Observer.
1	Aug. 11, 10h 52m 30s P.M.	Nyborg	100° + 55°	111° + 50°.5	2	Ch. Frost.
		Vallö	148 + 54	159 + 44	1	J. F. Nielsen.
2	Aug. 11, 11 34 14 P.M.	Sönderborg	1 + 66 .5	357 + 57	2	Maria Wolff.
		Vallö	249 + 24 .5	253 + 18	2	J. F. Nielsen.
3	Aug. 11, 11 47 0 P.M.	Odder	2 + 12	356 + 2	2	T. Köhl.
		Nyborg	12 + 33	4 + 25	1	Ch. Frost.

For Calculation.

No.	Beginning.			Ending.			Real Length of the Path.	Radiant.	
	h	λ	φ	h	λ	φ	β	A R	Decl.
1	73.5	1° 14′.3 W	56° 52′.3	45.1	1° 34′.2 E	56° 37′.2	45.3	50°	+ 61°
2	91	2 15 .9 W	55 13 .9	82	2 11 .7 W	55 4 .9	19.4	157	+ 60
3	104	0 6 .1 W	55 15 .7	77	0 31 .3 W	55 5 .3	44.1	44	+ 52

h and β are expressed in kilometers; λ is longitude from Copenhagen; φ is north latitude; *h* is the altitude of the meteor above the Earth's surface.

PLANETARY PHENOMENA FOR MARCH AND APRIL, 1908.

By Malcolm McNeill.

PHASES OF THE MOON, PACIFIC TIME.

New Moon...	March 2, 10h 57m A.M.	First Quarter..	April 8, 8h 31m A.M.
First Quarter.	" 9, 1 42 P.M.	Full Moon.....	" 16, 8 55 A.M.
Full Moon....	" 17, 6 28 P.M.	Last Quarter..	" 23, 11 7 A.M.
Last Quarter..	" 25, 4 32 A.M.	New Moon....	" 30, 7 33 A.M.
New Moon...	" 31, 9 2 P.M.		

The vernal equinox, the time when the Sun passes from the south to the north side of the equator, occurs on March 20th, at 4 P.M., Pacific time.

Mercury passed inferior conjunction on February 28th, becoming a morning star, and continues to be a morning star

until May 7th. It reaches its greatest west elongation on March 27th, and its apparent distance from the Sun is then 27° 49′. The planet reaches its aphelion on the following day, and therefore this apparent distance from the Sun is much greater than the average maximum elongation; but the planet is then 12° south of the Sun and rises only a little more than one hour before that body. This interval remains about the same throughout the latter half of March. It may be possible to see the planet in the early morning twilight if the air near the horizon is exceptionally clear, but it will not be an easy object. *Mercury* and *Saturn* are in very close conjunction at about noon on April 14th, the least distance being only 28′, less than the Moon's apparent diameter; but the planets are then only 18° from the Sun, and rise considerably less than an hour before sunrise.

Venus is an evening star, and is the most conspicuous object in the western sky in the evening. For several months it has been gradually moving out toward greatest east elongation, and reaches it on April 26th. Its distance from the Sun is then 45° 37′, not quite the maximum possible, as the planet passed perihelion on April 1st; but the planet at the end of April is at its greatest distance above the plane of the Earth's orbit as seen from the Sun, and nearly at its greatest distance above as seen from the Earth. This causes the setting of the planet to be considerably delayed, and during the entire month of April the planet remains above the horizon nearly four hours after sunset, nearly an hour longer than at the average greatest elongation. The greater part of this increase is, however, due to the fact that this greatest east elongation comes in the spring, while the planet's declination is 10° or more greater than that of the Sun. *Venus* and *Mars* are in conjunction on April 4th, at 7 A.M., Pacific time, the former passing 1° 37′ north of the latter.

Mars still remains an evening star, but is gradually being overtaken by the Sun in their common eastward motion, the distance between them diminishing from 50° on March 1st to 37° on April 30th. The time of the planet's setting at the end of the two months' period is half an hour earlier than at the beginning, changing from $10^h\ 22^m$ P.M., on March 1st, to $9^h\ 50^m$ P.M., on April 1st. The planet moves among the stars about 42° eastward and 10° northward through *Aries*

into *Taurus.* On April 1st it is less than 5° south of the *Pleiades,* and on April 20th it is about 6° north of *Aldebaran,* the first-magnitude red star of the *Hyades* group in *Taurus.* Its actual distance from the Earth is still rapidly increasing—about forty million miles during the two months,—and it will lose considerably in brightness; but there will be no difficulty in recognizing it, although by this time it will not be as bright as the brightest stars.

Jupiter still remains in fine position for evening observation, being in plain view until 5 A.M. on March 1st, and until 1 A.M. on April 30th. It is on the meridian, well up toward the zenith, at about 10 P.M. on March 1st, and at about 6 P.M. on April 30th. It is nearly stationary in the constellation *Cancer,* moving slowly westward until March 29th, and then moving eastward, but the whole motion is only about one half degree.

Saturn is too near the Sun for easy visibility, except at the beginning and end of the period. On March 1st it sets about an hour and a half after sunset, but its distance from the Sun diminishes rapidly, and it comes to conjunction on the evening of March 20th. After that it is a morning object, but even at the end of April it rises less than an hour and a half before sunrise. It is not bright, like *Venus,* and it will not be a very easy matter to see it at any time during March and April.

Uranus is an early-morning object on March 1st, too near the Sun to be seen; but the Sun draws away from it rapidly and the planet rises much earlier toward the end of the period —about midnight on April 30th. It is in the eastern part of *Sagittarius* north and east of the "milk-dipper." No bright stars are near to make identification easy.

Neptune is in the evening sky, not setting until after midnight. It is in the western part of the constellation *Gemini.*